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A VEGETATIVE GUIDE FOR ALASKA

Prepared by Soil Conservation Service in cooperation with University of Alaska Institute of Agricultural Sciences, Plant Science Research Division of the Agricultural Research Services USDA, University of Alaska Cooperative Extension Service, and the Alaska Association of Soil Conservation Subdistricts. September 1972.

M7-N-22612

USDA-SCS-PORTLAND, OREGON 1972

Issued in furtherance of Cooperative Extension Work, Acts of May 8 and June 30, 1914 in cooperation with the U.S. Department of Agriculture, Dr. James W. Matthews, Director, Cooperative Extension Service University of Alaska.

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Unprotected soils are highly subject to erosive forces, particularly wind and water.

Wind erosion on poorly-managed agricultural area. SCS PHOTO 1-278-13

Water erosion on poorly-managed construction site. SCS PHOTO 1-256-12

Good management practices utilizing adapted grass and/or groundcovers protect the soil from erosive forces.

Well-managed agricultural area adapted grasses planted to prevent wind erosion.

SCS PHOTO 1-109-6

Grass seeding trial plots on a road cut. Adapted grasses hold the soil and prevent water erosion. SCS PHOTO 1-150-13

Section I.

Introduction

This guide provides a common source of information concerning plant materials and management procedures both for forage production and revegetation of disturbed sites in Alaska. It is an extensive revision of the bulletin, "Grasses for Alaska," published in 1970.

This effort was initiated by the Alaska Association of Soil Conservation Subdistricts (AASCSD) upon specific request from industry and land-use agencies at an AASCSD sponsored meeting.

The wide range of conditions and problems in Alaska require unity in approach by contributing agencies, and this publication reflects the joint work of the Soil Conservation Service (SCS), The Cooperative Extension Service, Alaska Institute of Agricultural Sciences, Plant Science Research Division of Agricultural Research Service, USDA, and the State Division of Agriculture.

The SCS provides technical assistance to cooperating farmers, ranchers, and other land users. Rapid development of Alaska emphasizes the problem of non-agricultural land use. However, by careful management, major problems of soil erosion and stream sedimentation can be reduced or avoided. Costly mistakes can be prevented.

Research programs of the Institute of Agricultural Sciences and the Federal Plant Science Research Division, ARS, USDA, develop new, better adapted crop varieties and seek new and improved methods of producing, marketing, and utilizing agricultural products. Crop research is being adapted to revegetation problems, and we can anticipate increasing research emphasis in the field of non-agricultural land use problems.

The Cooperative Extension Service has the USDA educational responsibility, meeting the information needs of farm people. In recent years this responsibility has continually expanded to provide service to non-farm users of land and water resources. Soil analyses for lime and fertilization requirements are handled through the Extension Service.

The team approach has long been used by USDA in providing service. This team concept is again reflected in this publication, and "Grasses for Alaska" found widespread acceptance. A Vegetative Guide for Alaska is not intended as a final product. It must be periodically updated and expanded as new information becomes available. Experience in the field by industry, farmers, and land-use agencies will provide an important source of information for future revisions.

This vegetative guide is organized to allow a user to classify soil types related to his specific area of interest and to develop a recommendation for planting. The last sections are appendices referring to plant characteristics and additional reference material.

Section II.

Culture and Management For Establishing Grasses And Legumes

1. Soils

The upper 12 inches of the soil should consist of a loamy material and be able to hold at least 3/4 inches of water to permit the establishment of good vegetative cover. The soil must be porous enough to allow root penetration, and tillable for good seedbed preparation.

On construction sites such as highways, airports, and subdivisions, topsoil has often been removed. If a good turf is desired, it may be necessary to replace the soil material. Where soil has been entirely removed, at least 4 inches of loamy material should be added before seeding.

2. Seedbed Preparation

Proper seedbed preparation is an important factor in establishing a good stand of grass. In many areas incorporation of dead vegetation and organic matter by intensive cultivation is necessary in order to get a satisfactory seedbed. After tilling and packing the seedbed should be firm; a heel imprint should barely show after walking over the ground. The soil should be weed-free and moist. When the seedbed is well prepared, the amount of seed needed will be less and the success of the planting will be greater. On steep sloping land or construction sites where tillage implements cannot be used, the soil should remain in a rough condition. Slopes should be prepared as well as possible and roughened with construction equipment so the broadcast seed will have a chance to remain in place long enough to germinate and produce a stand.

3. Seed Specifications

Certified seed should be used whenever it is available. Germination and purity tests should be used to determine the proper seeding rates for each grass or legume variety. Legumes should be scarified if necessary and inoculated with the proper strain of nitrogen-fixing bacteria before seeding. Use only northern strains of grasses and legumes.

4. Time of seeding

For best results seedings should be made from May 15 to June 15. Successful seedings can be made later in the summer but grass and legumes should not be seeded later than August 10 to avoid winterkill. Annual ryegrass or cereal grain can be seeded until September 1 to secure a temporary cover to reduce erosion. The area should then be seeded to a perennial grass the next spring.

5. Seeding Methods

a. Drill

A grass drill is the best method of seeding on nearly level to sloping land, but the preferred method will depend on slope, and conditions of the planting site. Very small seed must be seeded no more than 1/4 to 1/2 inch deep. A packer should be pulled behind the drill unless the equipment already has a packer combination. On steep slopes where drilling is not feasible, the hydroseeder method is preferred. When applying seed, fertilizer or mulch materials with the hydroseeder, use not more than 100-150 pounds of solids per 100 gallons of water. It is best to apply seed or seed and fertilizer first, to ensure seed contact with the soil, followed by the mulch. Fertilizer can be added to the water slurry as long as the material is used within a few hours after mixing, preferably when the soil is already moist.

b. Hydroseed

Hydroseeder Operation (1,000 gallon tank)	
1. Seeding – (2 acres)	Seed 40 – 100 pounds Fertilizer – 800 - 1,200 pounds Water – 1,000 gallons
2. Mulching – (1/2 acre)	Fiber mulch – 500-600 pounds Water – 1,000 gallons

If necessary to seed, fertilize, and mulch in one operation, each 1,000 gallon load should cover 1/3 acre and the mixture for each load would be as follows:

Seed 7 - 17 pounds	Mulch 333 - 400 pounds
Fertilizer 135 - 200 pounds	Water 1,000 gallons

Caution: Add seed and fertilizer first and mix thoroughly in tank at least 1/3 full of water before adding mulch.

c. Broadcast

If the broadcast method of seeding is used, rates of speed application should be twice that recommended for drilling.

d. Sprigging

Sprigging (planting a shoot, root or sprout of a plant) and sodding (covering with sections of sod) are special methods which are costly, but necessary for some grasses. Sodding and sprigging may be preferable to seeding in critical situations.

6. Fertilization

Fertilization is important to ensure a good growth of grass. Grass should be fertilized each year for best results.

The general recommendations for fertilizer are 60 lbs. N (nitrogen) – 60 lbs. P_2O_5 (phosphate) – 60 lbs. K_2O (potash) per acre the first year and a maintenance application of 30–60–30 each ensuing year on construction sites. On cropland use 60–60–60 the first year and 120–60–60 each ensuing year. Where soil testing service is available fertilizer application should be based on soil tests. Some possible combinations of commercially available fertilizers to obtain the indicated amounts of N, P, & K are:

60–60–60	300lbs of 10–20–20 plus 100 lbs of 33–0–0 or
	300lbs of 10–20–10 plus 100lbs of 33–0–0 plus 50lbs of 0–0–60.
120–60–60	300lbs of 10–20–20 plus 300lbs of 33–0–0 or
	300lbs of 10–20–10 plus 300lbs of 33–0–0 plus 50lbs of 0–0–60.
30–60–30	300lbs of 10–20–10.

Many other combinations are possible. For best results, at least one-half of the nitrogen added should be in the form of nitrate. Urea is not generally recommended because of its slow availability in Alaska soils.

7. Maintenance

Grass seedings must be kept moist after seeding and until the grass has reached a height of 1 - 2 inches. If possible, supplement water should be supplied especially during prolonged periods of drought while grass is becoming established. Areas planted other than for cropland may be cut for hay or silage if the situation warrants cutting. Critical sites may need water disposal structures, some reseeding or sodding, and maintenance applications of mulch and fertilizer.

8. Mulching

Mulching is important in establishing vegetation on steep construction sites or other critical areas. A mulch cover will help hold moisture, protect the soil from erosion, hold seed in place and keep soil temperatures more constant. It should be applied uniformly by mechanical means or by hand after seeding. Common types of mulching material used in critical-area plantings are hay, small grain straw, straw-asphalt, wood fiber mulches, peat moss, gravel, and jute matting. Grass seed straw, or native bluejoint hay, cut when seed is about mature, often contains viable seed and is excellent for mulching. Some bare soil should still be visible through a straw mulch. Mulching is necessary on steep and critical areas, but is expensive and not always necessary to establish grass stands on favorable sites. Very early spring applications may retard the rate at which soils may warm up.

9. Annual Seedings

Annual ryegrass (Lolium multiflorum) is recommended for a quick catch on burned or critical areas for erosion control. Seedings at rates of 10 - 25 pounds per acre should be made before August 1 for best results. Plan on seeding to perennial species the following spring. Annual ryegrass is also recommended for seeding with a perennial grass mixture to control erosion until the perennial grass becomes established.

Section III.

Soil and Site Groups

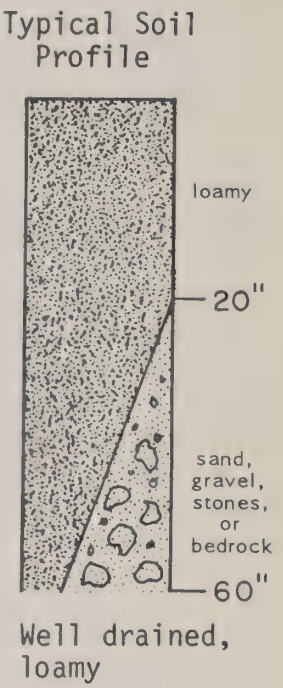
The following soil and site groupings are intended primarily as a guide to help determine the most desirable adapted plant materials to use for conservation practices, forage production, and control of highly erosive or disturbed sites.

Soils and sites in Alaska have been divided into six groups. Each group has unique properties that affect the choice of materials to be planted. The properties considered in making these groupings are soil texture, natural drainage, and depth of substrata which are severely restrictive to the growth of most plant roots. Other factors affecting plant selections, such as climate, natural fertility, pH, slope, and aspect are considered in the planting and seeding recommendations which follow this section.

Areas that have been disturbed, such as bank cuts, ditches, and fills require on-site investigation before definite seeding or planting recommendations can be made. It is then necessary to determine the soil and site group to which the existing conditions most nearly correspond. Soil tests for fertilizer and lime recommendations for the site should be considered; these can be obtained through the Cooperative Extension Service.

Following are brief descriptions of each of the vegetative soil and site groups in Alaska. Together with the narrative description of each group is a table summarizing some important properties and characteristics of the group. In this table the drainage class refers to internal soil drainage (terms defined in Soil Survey Manual, Agricultural Handbook No. 18, USDA). The depth figures, given in inches, are from the surface (excluding surface layer of raw organic materials) down to root restrictive material such as bed rock, very firm clayey materials or hardpan. The available water holding capacity, given in inches, is the total for that part of the soil profile generally available to roots, or to a depth of 30 inches if no root restrictions are present within that depth. Included with the descriptions are the land capability units for each group. An explanation of the land capability classification system used by the Soil Conservation Service is included. Soil maps and more detailed soil information are available in soil survey reports published by the Soil Conservation Service.

Group 1
Soils and Sites with Few or No Limitations



The soils and sites in this group are well drained and have slopes of 20% or less. They consist of silt loam to sandy loam materials ranging from 20 to more than 60 inches thick. These materials are moderately permeable and have a water holding capacity of 5 to 8 inches. The natural substrata or subgrade materials may be very porous gravel deposits, moderately fine textured sediments, bedrock, or rock fill.

With adequate fertilization the soils and sites in this group are generally suitable for a wide range of climatically adapted species.

Major soil Limitations	Drainage Class	Depth (inches)	USDA Texture	Engineering Classification Unified	AASHO	Available Water holding Capacity (inches)
None	Well and moderately well drained	More than 20	Silt loam, fine sandy loam, sandy loam	ML CL SM	A-2 A-4 A-6 Some A-7	5 to 8

Undisturbed soils in this grouping include the following soil cabability units as described in the Soil Survey Reports of the Soil Conservation Service

Soil Capability Units

Fairbanks – IIc–1,2,3 IIc–1,2 IIs–1 IIIe–1,2 IVe–1
Homer-Ninilchik–IIc–1 IIe–1 IIIe–1,2 IVe–1 VIc–1
Kenai-Kasilof–IIc–1 IIe–1 IIIe–1 IVe–1,2
*Kenny Lake–*IIIc–1 IIIe–1
Kodiak–IIIc–1 IVe–1
Matanuska Valley–IIc–1,2 IIe–1,2 IIIe–1,2 IVe–1
*Salcha-Big Delta–IIc–1,2 IIe–1,2 IIs–1 IIIe–1,2 IVe–1
* Susitna Valley–IIc–1,2 IIe–1,2 IIIe–2 IVe–1

* unpublished soil survey reports; maps and information located at Soil Conservation Services offices.

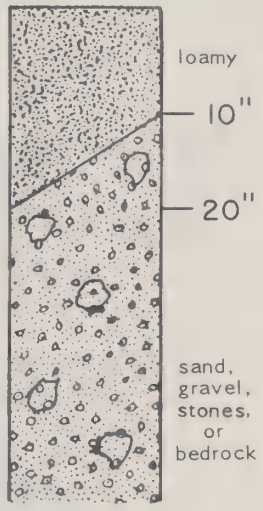
Group 2

Soils and Sites with Limitations Due to Low Water Holding Capacity

The soils and sites in this group consist of well drained silt loam to sandy loam materials, ranging from 10 to 20 inches in depth, and generally underlain by gravel or sandy deposits. In places they may be underlaid by bedrock or rock fill. Slopes are 20% or less. The permeability is moderate and the water holding capacity ranges from about 3 to 5 inches. The soils and sites in this group have a tendency to be droughty.

On these soils and sites the use of either drought tolerant species or supplemental irrigation is usually necessary. With proper fertilization and adequate moisture, they are suitable for a wide range of climatically adapted species.

Typical Soil Profile



Well drained loamy, shallow

Major soil Limitations	Drainage Class	Depth (inches)	USDA Texture	Engineering Classification Unified	AASHO	Available Water holding Capacity (inches)
Drought-iness	Well-drained	10 to 20	Silt loam, fine sandy loam, sandy loam	ML CL SM	A-2,A-4 A-6 Some A-7	3 to 5
		Sub-stratum	Very gravelly sand or shattered rock	GW,GP GM,SW, SP	A-1,A-3	

Undisturbed soils in this grouping include the following soil capability units as described in Soil Survey Reports of the Soil Conservation Service.

Soil Capability Units

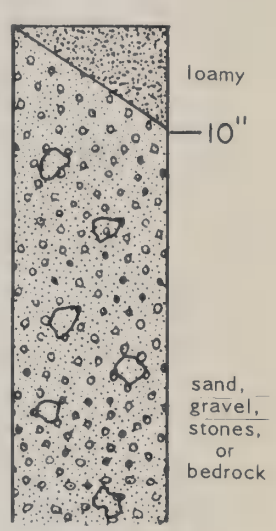
Fairbanks–IIIs–1,2
* Kenny Lake–IIIc–2 IIIs–1,2 IIIe–2,3,4 IVe–1
Homer-Ninilchik–IIIs–1
Kodiak–(none)
Kenai-Kasilof–IIIs–1,2 IVs–1,2
Matanuska Valley–IIIe–3 IIIs–1,2,3 IVe–2 IVw–3
Salcha-Big Delta–IIIe–4 IIIs–1 **IVe–2
* Susitna Valley–IIIe–1,3 IIIs–1,2,3 IVe–2,3,4

* unpublished soil survey reports; maps and information located at Soil Conservation Service offices.

** very shallow or sandy soils in this unit are in Group III

Group 3
Soils and Sites with Severe Limitation Due to Very Low Water Holding Capacity or Steep Slopes

Typical Soil Profile



Droughty, very shallow

The soils and sites in this group are well drained or excessively drained, and are very shallow or steep. Many construction sites, road cuts and fills, and disturbed or compacted sites are included.

The very shallow soils have less than 10 inches of loamy materials over gravel, sand, or bedrock. The water supplying capacity is less than 3 inches. The steep soils may be deep or shallow over gravel, sand, or bedrock, but the water supplying capacity is equally low because of excessive runoff. On the deep soils, especially those high in silt, the erosion hazard is high.

The choice of plants for this group is usually limited to species that are adapted to droughty condition, and that form a dense root mass.

Major soil Limitations	Drainage Class	Depth (inches)	USDA Texture	Engineering Classification Unified	AASHO	Available Water holding Capacity (inches)
Drought-iness or high erosion hazard	Well and excessively drained	10 to 20	Silt loam, sandy loam sand	ML CL SM	A-2,A-4 A-6	less than 3
		Sub-stratum	Very gravelly sand or shattered rock	GW,GP, GM,SW, SP	A-1,A-3	

Undisturbed soils in this grouping include the following soil capability units as described in Soil Survey Reports of the Soil Conservation Service.

Soil Capability Units

Fairbanks–IVs–1 VIs–1 VIIIs–1, VIe–1, VIIe–1
Homer-Ninilchik–VIIIs–1, VIe–1 VIIe–1,2
Kenai-Kasilof–IVs–3 VIs–1 VIIs–1 VIIIs–1 VIe–1 Viie–1
* Kenny Lake–IVs–1,2,3 IVe–2 VIe–1, VIs–1 VIIe–1 VIIIe–1
Kodiak–VIs–1,2 VIIIs–1 VIe–1,2 VIIe–1
Matanuska Valley–IVs–1,2 VIs–1,2,3 VIIs–1,2 VIIIs–1 VIe–1 VIIe–1
* Salcha-Big Delta–IIIe–3 **IVe–2 IVs–1 VIe–1,2 VIIe–1 VIIIs–1 VIe–1 VIIe–1
* Susitna Valley–VIs–1 VIIIs–1 VIe–1,2 VIIe–1,2 VIIIe–1

*unpublished soil survey reports; maps and information located at Soil Conservation Service offices.

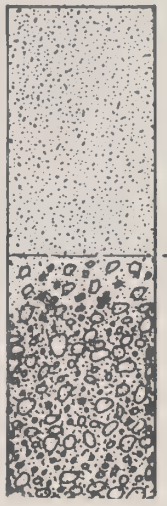
**Deep soils in this unit are in Group II

Group 4
Soils and Sites with Moderate Limitations Due to Excess Moisture

The soils and sites in this group have textures ranging from silty clay loam to fine sandy loam. The natural drainage may be impeded by slowly permeable layers in the substrata, permafrost, or low lying positions on the landscape. The water table is usually more than two feet below the surface but may fluctuate to higher levels for short periods of time during the growing season.

If these soils and sites are drained, they are generally suitable for growing the same plants which are adapted to Group I. If they are undrained, plant choices will be limited to those that are tolerant to cool, moist conditions.

Typical Soil Profile



Impeded drainage, loamy

Major soil Limitations	Drainage Class	Depth (inches)	USDA Texture	Engineering Classification Unified	AASHO	Available Water holding Capacity (inches)
Impeded drainage	Somewhat poorly drained or poorly drained	More than 20	Silty clay loam, silt loam sandy loam, fine sandy loam	ML CL SM	A-2,A-4 A-6 Some A-7	More than 5 (may be water-logged for short periods)

Undisturbed soils in this group include the following soil capability units as described in Soil Survey Reports of the Soil Conservation Service.

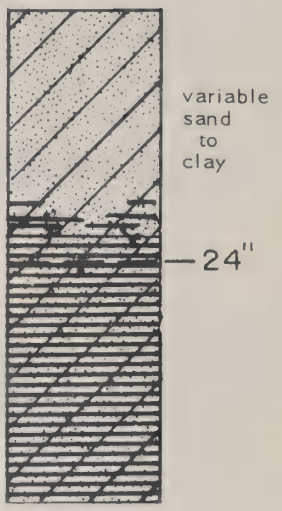
Soil Capability Units

Fairbanks–IIIw–1
Homer-Ninilchik–IIw–1 IIIw–1,2,3 IVw–1,2,3
Kenai-Kasilof–IIIw–1 IVw–1,3
Kenny Lake–IIIw–1 IVw–1 VIw–2 VIIw–1
Kodiak–IVw–1
Matanuska Valley–IIIw–1,2 IVw–1,2
* Salcha-Big Delta–IIIw–1,2
* Susitna Valley–IIw–1 IIIw–1,2 IVw–1,2

* unpublished reports; maps and information located at Soil Conservation Service offices.

Group 5
Soils and Sites with Severe Limitations Due to Excess Moisture

Typical Soil Profile



Wet, variable texture

This group of soils and sites has a wide range of textures and are generally wet throughout the growing season. The water table is usually within two feet of the surface. These wet conditions may be due to slowly permeable materials, high permafrost tables, slow surface runoff, or seepage from adjacent areas.

Many of these soils and sites are not feasible to drain, and plant choices are limited to those that are the most tolerant to cold, wet soil conditions. If they can be drained to maintain the water table to a depth of two feet or more, the choice of plants can be widened.

Major soil Limitations	Drainage Class	Depth (inches)	USDA Texture	Engineering Classification Unified	Engineering Classification AASHO	Available Water holding Capacity (inches)
Wetness (high water table)	Poorly drained	More than 20 May have up to 16" of peat on surface	Very wide range			Usually waterlogged

Undisturbed soils in this grouping include the following soil capability units as described in Soil Survey Reports of the Soil Conservation Service

Soil Capability Units

Fairbanks–IVw–1,2 VIw–1 VIIw–1 *VIIIw–1
Homer-Ninilchik–VIw–1,2 VIIw–1 *VIIIw–1
Kenai-Kasilof–VIIw–1,3
* Kenny Lake–VIw–1 *VIIIw–1
Kodiak–VIw–1
Natanuska Valley–VIw–1,2,4 VIIw–1,2,3 *VIIIw–1
** Salcha-Big Delta–IVw–1,2 VIw–1,2 VIIw–1 *VIIIw–1
** Susitna Valley–VIw–1,2 VIIw–2,3 *VIIIw–1

* includes frequently flooded land that usually requires special treatment.

** unpublished soil survey reports; maps and information at Soil Conservation Service offices.

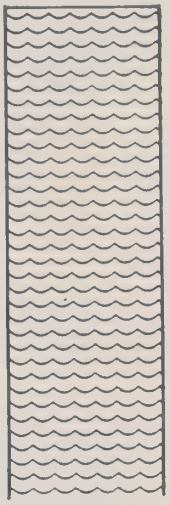
Group 6

Soils and Sites Consisting of Wet Peat Materials

These soils and sites consist of deep peat materials which are usually wet throughout the growing season. Most of these occur in low lying muskegs and the water table is usually near the surface. A few of these soils and sites have high permafrost tables.

The choice of plants is very limited.

Typical Soil Profile



Wet, peat

Major soil Limitations*	Drainage Class	Depth (inches)	USDA Texture	Engineering Classification Unified	AASHO	Available Water holding Capacity (inches)
Wetness (water table at surface)	Very poorly drained	More than 16	Peat	Pt	A-8	Waterlogged
		Sub-stratum	Very wide range			

Undisturbed soils in this grouping include the following soil capability units as described in Soil Survey Reports of the Soil Conservation Service.

Soil Capability Units

Fairbanks–VIIw–2
Homer-Ninilchik–VIIw–2
Kenai-Kasilof–VIIw–2 VIIIw–1
* Kenny Lake–VIIw–2
Kodiak–VIIw–1
Matanuska Valley–VIIw–4
* Salcha-Big Delta–VIIw–2
* Susitna Valley–VIIw–1

* unpublished soil survey reports; maps and information at Soil Conservation Service offices.

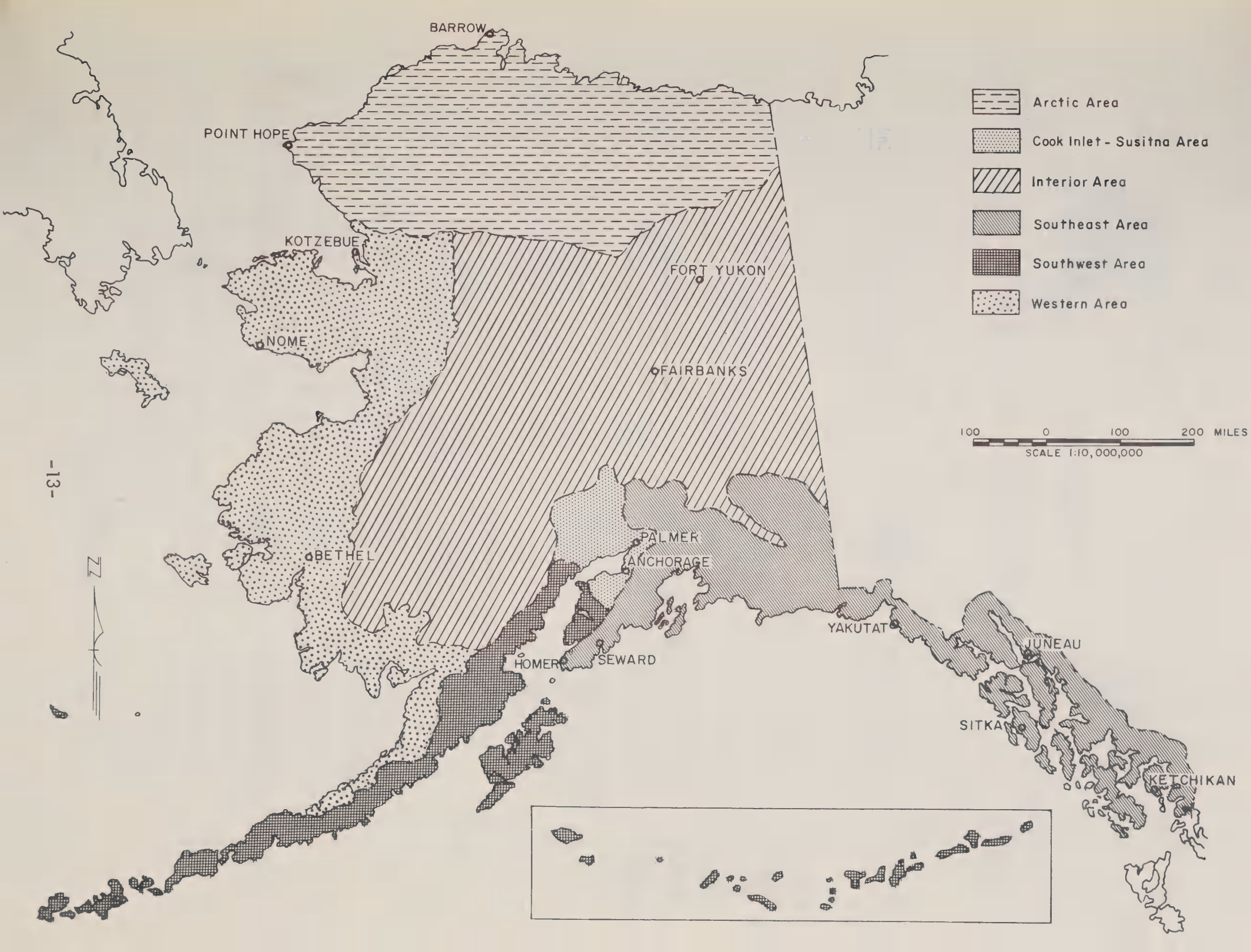
Section IV

Seeding Recommendations

In section III this report described the six basic soil and site groups. Section IV provides vegetative recommendations for these soil and site groups in Alaska. The soil groups described are basic for the entire state. Seed and fertilizer recommendations are dependent upon geographic areas in Alaska primarily because of climate. A map indicating the geographic areas is provided on page 13.

After determining the soil group in the geographic area of concern, seeding and fertilizer recommendations can be developed using the appropriate tables provided in this section.

Note: Soils must be tested to determine the amount of lime needed to establish a stand of grass. On construction sites lime generally is necessary only where pH is lower than 5.5, the soil analysis can be obtained through the Cooperative Extension Service or a private testing laboratory.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POINT HOPE
KOTZEBUE
NOME
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FAIRBANKS
BETHEL
PALMER
ANCHORAGE
HOMER
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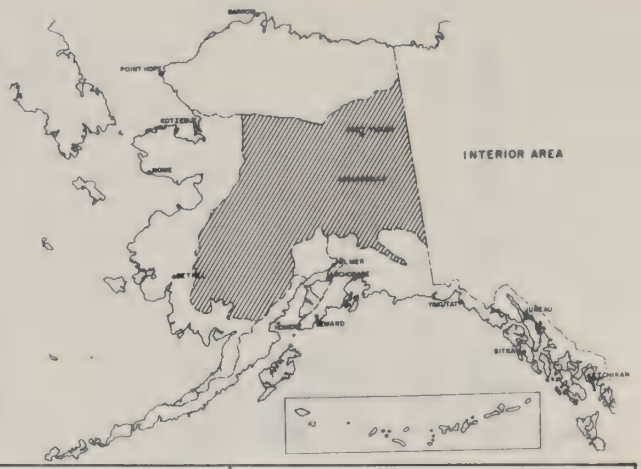


C1–INTERIOR AREA
GROUP 1

Soils and Sites with
Few or No Limitations

Mixtures for Revegetation of Highly Erosive or Disturbed Sites

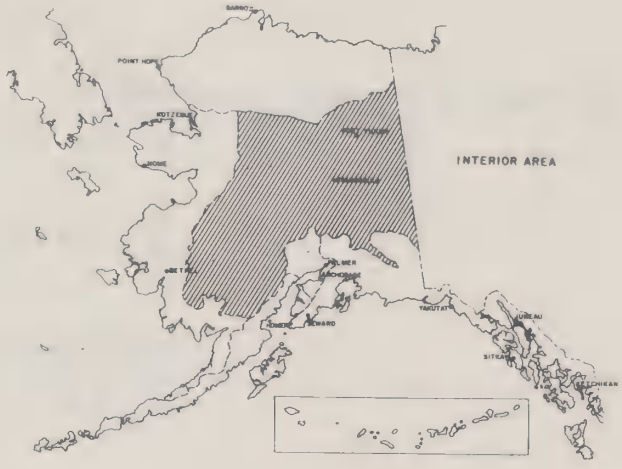
	Mixtures and Species in Numbered Order of Preference	Variety name in Order of Preference	Drill Seeding Rate lbs/Ac.	Fertilizer 1st yr.	Fertilizer 2nd yr.
Mix 1	Red fescue	Arctared or Olds	10	60–60–60	60–60–60
	Alsike or White Dutch clover		3		
Mix 2	Smooth Brome	Polar or Manchar	15 or 10	60–60–60	60–60–60
	Alsike or White Dutch clover		3		
Mix 3	Smooth Brome	Polar or Manchar	8 or 5	60–60–60	60–60–60
	Kentucky bluegrass	Nugget or Merion	5 or 5		
	Alsike or White Dutch clover		3		

* Annual ryegrass may be added to any single species or mixture for quick cover, at a rate not to exceed 5 pounds per acre.

Species for Cropland Use

Species in Numbered Order of Preference	Variety name in Order of Preference	Drill Seeding Rate lbs/Ac.	Fertilizer 1st yr.	Fertilizer 2nd yr.
1. Smooth Brome	Polar or Manchar	15 or 15	60–60–60	120–60–60
2. Timothy	Engmo	6	60–60–60	120–60–60
3. Red clover*	Alaskland	1-2	Fertilize as above for grass management	
4. White Dutch clover*		1-2	" "	
5. Alsike clover*	Aurora	1-2	" "	

*when used add to seeding rates for grass



C1–INTERIOR AREA
GROUP 2

Soils and Sites with Moderate Limitations Due to Low Water Holding Capacity

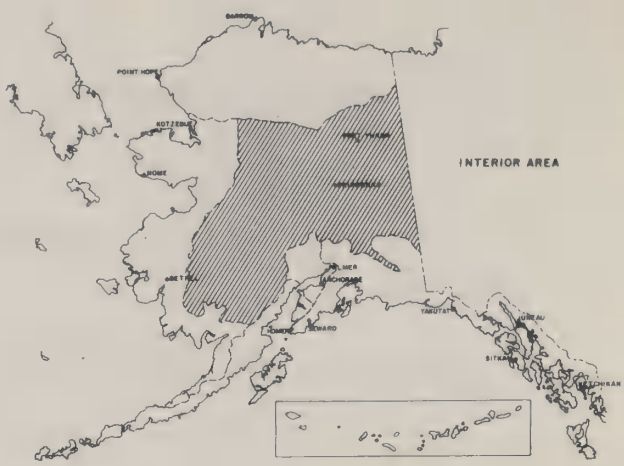
Mixtures for Revegetation of Highly Erosive or Disturbed Sites

	Mixtures and Species in Order of Preference	Variety name in Order of Preference	Drill Seeding Rate lbs/Ac.	Fertilizer 1st yr.	Fertilizer 2nd yr.
Mix 1	Smooth Brome	Polar or Manchar	8 5	60–60–60	60–60–60
	Hard fescue	Durar	5		
	Alsike or White Dutch clover		3		
Mix 2	Smooth Brome	Polar or Manchar	15 10	60–60–60	60–60–60
	Alsike or White Dutch clover		3		
Mix 3	Smooth Brome	Polar or Manchar	8 5	60–60–60	60–60–60
	Red fescue	Arctared Olds or Boreal	8 5		
	Alsike or White Dutch clover		3		

Species for Cropland Use

Species in Numbered Order of Preference	Variety name in Order of Preference	Drill Seeding Rate lbs/Ac.	Fertilizer 1st yr.	Fertilizer 2nd yr.
1. Smooth Brome	Polar or Manchar	15 10	60–60–60	120–60–60
2. Timothy	Engmo	6	60–60–60	120–60–60
3. Kentucky bluegrass	Nugget Merion **	10 10	60–60–60	120–60–60
4. Red clover*	Alaskland	1-2	Fertilize as above for grass management	
5. White Dutch clover*		1-2	" "	
6. Alsike clover*	Aurora	1-2	" "	

* when used add to seeding rates for grass
** lawns and turf only



C1–INTERIOR AREA
GROUP 3

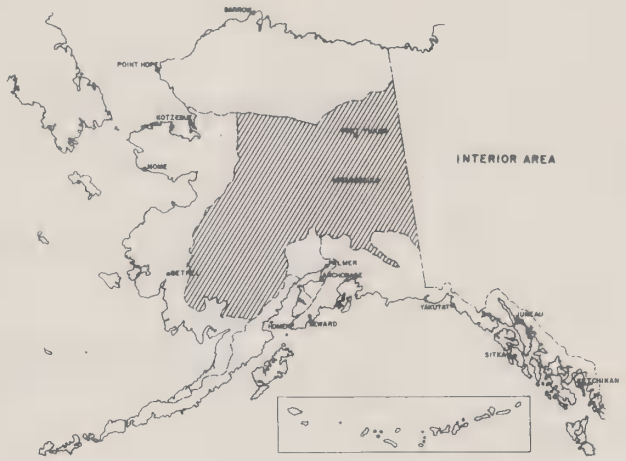
Soils and Sites with Severe Limitations Due to Very Low Water Holding Capacity or Steep Slopes

		Mixtures or Species in Order of Preference*	Variety name in Order of Preference	Drill Seeding Rate lbs/Ac.	Fertilizer 1st yr.	Fertilizer 2nd yr.
Mixtures for Revegetation of Highly Erosive or Disturbed Sites	Mix 1	Smooth Brome Hard fescue	Polar or Manchar Durar	8 5 5	60–60–60	60–60–60
	Mix 2	Crested wheatgrass Hard fescue	Nordan Durar	5 5	60–60–60	60–60–60
	Mix 3	Streambank wheatgrass	Sodar	15	60–60–60	60–60–60
	Mix 4	Smooth Brome	Polar or Manchar	15 10	60–60–60	60–60–60

* Yellow or White sweet clover may be added at rate of 5 lbs/Ac. to the above mixtures.

	Species in Numbered Order of Preference *	Variety name in Order of Preference	Drill Seeding Rate lbs/Ac.	Fertilizer 1st yr.	Fertilizer 2nd yr.
Cropland Use	1. Smooth Brome	Polar or Manchar	15 10	60–60–60	60–60–60

* Note: If the soils of this group are irrigated, use seeding recommendations for Soil Group II



C1–INTERIOR AREA
GROUP 4

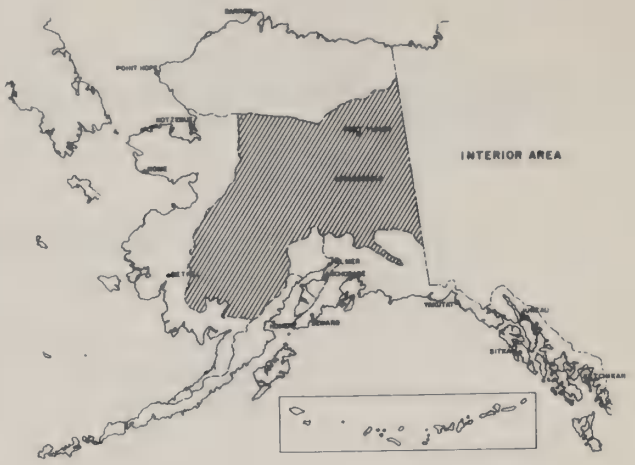
Soils and Sites with Moderate Limitations Due to Excess Moisture

Mixtures for Revegetation of Highly Erosive or Disturbed Sites

	Mixtures and Species in Order of Preference	Variety name In Order of Preference	Drill Seeding Rate lbs/Ac.	Fertilizer 1st yr.	Fertilizer 2nd yr.
Mix 1	Creeping foxtail	Garrison	10	60–60–60	60–60–60
	White Dutch or Alsike clover		3		
Mix 2	Creeping foxtail	Garrison	10	60–60–60	60–60–60
	Kentucky bluegrass	Nugget or Merion	5 5		
	White Dutch or Alsike clover		3		
Mix 3	Timothy	Engmo	6	60–60–60	60–60–60
	Creeping Red fescue	Arctared or Olds	8 5		
	White Dutch or Alsike clover		3		
Mix 4	Smooth Brome	Manchar or Polar	10 15	60–60–60	60–60–60
	White Dutch or Alsike clover		3		

Species for Cropland Use

Note: These soils must be drained for cropland use. When drained refer to Group I.



C1–INTERIOR AREA
GROUP 5

Soils and Sites with Severe Limitations Due to Excess Moisture

Mixtures for Revegetation of Highly Erosive or Disturbed Sites

	Mixtures and Species in Order of Preference	Variety name in Order of Preference	Drill Seeding Rates lbs/Ac.	Fertilizer 1st yr.	Fertilizer 2nd yr.
Mix 1	Creeping foxtail	Garrison	10	60–60–60	60–60–60
	Kentucky bluegrass	Nugget or Merion	5 5		
	White Dutch or Alsike clover		3		
Mix 2	Creeping foxtail	Garrison	10	60–60–60	60–60–60
	White Dutch or Alsike clover		3		
Mix 3	Timothy	Engmo	6	60–60–60	60–60–60
	Kentucky bluegrass	Nugget or Merion	5 5		
	White Dutch or Alsike clover		3		

Species for Cropland Use

(These soils must be drained for Cropland Use, but usually cannot be completely drained)

Species in Numbered Order of Preference	Variety name in order of Preference	Drill Seeding Rates lbs/Ac.	Fertilizer 1st yr.	Fertilizer 2nd yr.
1. Creeping Meadow foxtail	Garrison	10	60–60–60	60–60–60
2. Timothy	Engmo	6	60–60–60	120–60–60
3. Kentucky bluegrass	Nugget Merion*	10 10	60–60–60	120–60–60
4. Smooth Brome	Polar Manchar	15 10 (only if completely drained)	60–60–60	120–60–60
5. Red Clover***	Alaskaland	1-2	Fertilize as above for grass management	
6. White Dutch** clover		1-2	" "	
7. Alsike clover**	Aurora	1-2	" "	

Note: The permafrost, condition common to these soils will normally return to the surface if grass is grown for more than 5 years.

* for lawns and turf only
** only if completely drained
*** when used add to seeding rates for grass.

C1–INTERIOR AREA
GROUP 6

Soils and Sites consisting of Wet Peat Materials

(There are no seeding recommendations for this Group)

*Spread freshly cut sod of cottongrass, other sedges or native peat-tundra vegetation on disturbed areas. Pack and fertilize as indicated by soil tests.

*Research is continuing in this area but specific grass seeding recommendations are not yet available.

		Mixtures & Species in Numbered Order of Preference	Variety name in Order of Preference	Drill Seeding Rate lbs/Ac.	Fertilizer 1st yr.	Fertilizer 2nd yr.
Mixtures for Revegetation of Highly Erosive or Disturbed Sites	Mix 1	Creeping foxtail	Garrison	10	60–60–60	60–60–60
		Meadow foxtail	Common	10		
	Mix 2	Reed canarygrass	Frontier	10	60–60–60	60–60–60
		Alsike clover		2		

	Species in Numbered Order of Preference	Variety name in Order of Preference	Drill Seeding Rate lbs/Ac.	Fertilizer 1st yr.	Fertilizer 2nd yr.
Species for Cropland Use	1. Creeping foxtail	Garrison	10	60–60–60	120–60–60
	2. Reed canarygrass**	Frontier	10	60–60–60	120–60–60
	3. Meadow foxtail	Common	10	60–60–60	120–60–60
	4. Kentucky bluegrass	Nugget or Merion	10	60–60–60	120–60–60

**Use new seed

(There are no seeding recommendations for this group)

Disturbed wet areas may be revegetated by sodding or spreading living material from adjacent areas, packing and fertilizing according to soil tests.

*These recommendations are based on judgement and not on actual trials in the area.

C2–COOK INLET - SUSITNA AREA
GROUPS 1 & 2

Soils and Sites with Few or No Limitations and Soils and Sites with Moderate Limitations Due to Low Water Holding Capacity

Mixtures for Revegetation of Highly Erosive or Disturbed Sites

	Mixtures and Species in Order of Preference	Variety name in Order of Preference	Drill Seeding Rates lbs/Ac.	Fertilizer 1st yr.	Fertilizer 2nd yr.
Mix 1	Red fescue	Arctared or Olds or Boreal	15 10	60–100–60	30–60–30
	Alsike or White Dutch clover		2-4		
	Annual Ryegrass		5		
Mix 2	Kentucky Bluegrass	Nugget or Merion	10	60–100–60	30–60–30
	White Dutch or Alsike clover		2-4		
	Annual Ryegrass		5		
Mix 3	Hard fescue	Durar	20	60–60–60	30–60–30
Mix 4	Red fescue	Arctared or Olds or Boreal	15 10	60–60–60	30–60–30
Mix 5	Kentucky bluegrass	Nugget Merion	10	60–60–60	30–60–30
Mix 6	Smooth Brome	Manchar	10	60–60–60	30–60–30

* if broadcast or hydroseeded, rates should be doubled.

Species for Cropland Use

Species in Numbered Order of Preference	Variety name in Order of Preference	Drill Seeding Rates lbs/Ac.	Fertilizer 1st yr.	Fertilizer 2nd yr.
1. Smooth Brome	Polar or Manchar	15 10	60–60–60	120–60–60
2. Timothy	Engmo	6	60–60–60	120–60–60
3. Creeping foxtail	Garrison	15	60–60–60	120–60–60
4. Red fescue	Arctared or Olds or Boreal	15 10	60–60–60	120–60–60

C2–COOK INLET - SUSITNA AREA
GROUP 3

Soils and Sites with Severe Limitations Due to Low Water Holding Capacity

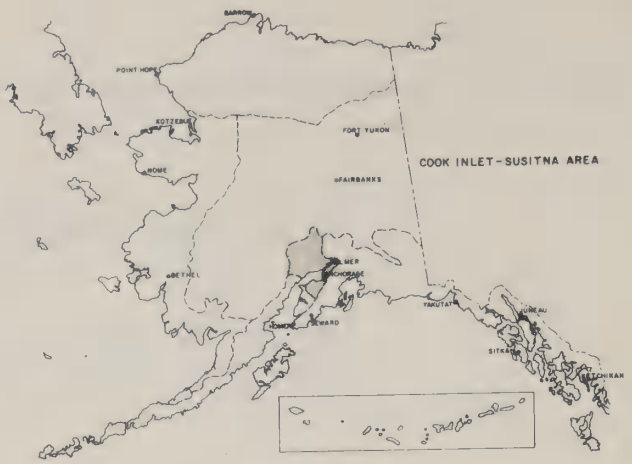
Mixtures for Revegetation of Highly Erosive or Disturbed Sites

	Watering is generally required at least for establishment and preferably for first 2 years.				
	Mixtures & Species in Numbered Order of Preference	Variety name in Order of Preference	Drill* Seeding Rate lbs/Ac.	Fertilizer 1st yr.	2nd yr.
Mix 1	Crested Wheatgrass	Summit or Nordan	5	60–100–60	30–60–30
	Hard fescue	Durar	5		
Mix 2	Hard fescue	Durar	10	60–100–60	30–60–30
	White Dutch clover or Sweet clover		2-4		
	Annual Ryegrass		5		
Mix 3	Hard fescue	Durar	10	60–60–60	40–20–20
Mix 4	Streambank wheatgrass	Sodar	10	60–60–60	40–20–20

*If broadcasted or hydroseeded, double the seeding rate.

Cropland Use

Irrigation may be necessary – Refer to Groups I & II
Creeping foxtail – (wet spots only)



C2–COOK INLET - SUSITNA AREA
GROUP 4

Soils and Sites with Moderate Limitations Due to Excess Water

Species for Revegetation of Highly Erosive or Disturbed Sites

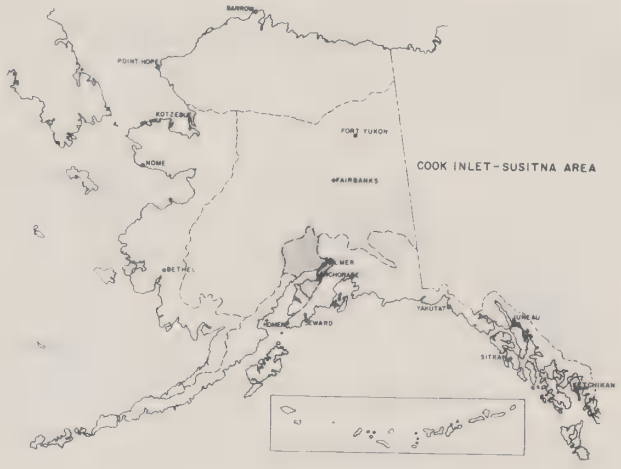
	Species in Numbered Order of Preference*	Variety name in Order of Preference	Drill** Seeding Rate lbs/Ac	Fertilizer 1st yr.	Fertilizer 2nd yr.
1	Creeping foxtail	Garrison	10	60–60–60	30–60–30
2	Meadow foxtail	Common	10	60–60–60	30–60–30
3	Red fescue	Arctared or Boreal or Olds	15 10	60–60–60	30–60–30
4	Timothy	Engmo	10	60–60–60	30–60–30
5	Reed canarygrass	Frontier	10	60–60–60	30–60–30

*Alsike clover at 2-4 lbs/acre may be added to any of the species and add 5 lbs annual rye to critical area seedings
**If broadcast or hydroseeded, double the seeding rate.

Species for Cropland Use

Species in Numbered Order of Preference*	Variety name in Order of Preference	Drill Seeding Rate lbs/Ac	Fertilizer 1st yr.	Fertilizer 2nd yr.
1. Creeping foxtail	Garrison	10	60–60–60	60–60–60
2. Meadow foxtail	Common	10	60–60–60	60–60–60
3. Reed canarygrass	Frontier	10	60–60–60	60–60–60
4. Timothy	Engmo	6	60–60–60	60–60–60

*Note: If land has been drained, use recommendations for Group I

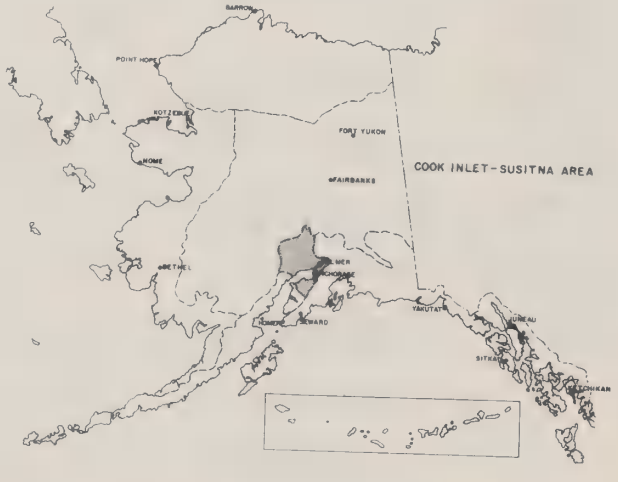


C2–COOK INLET - SUSITNA AREA GROUP 5

Soils and Sites with Severe Limitations Due to Excess Moisture

Soils and Sites With Severe Limitations Due to Excess Moisture

These sites must be drained. When drained refer to Group I



C2–COOK INLET - SUSITNA AREA GROUP 6

Soils and Sites Consisting of Wet peat Materials

There are no seeding recommendations for this group.

*Disturbed wet areas may be revegetated by sodding or spreading living material from adjacent areas onto disturbed areas, packing and fertilizing, and using fertilizers indicated by a soil test.

C3–SOUTHEAST AREA
GROUPS 1,2,3

Soils and Sites with Few or No Limitations
Soils and Sites with Moderate Limitations Due to Low Water Holding Capacity
Soils and Sites with Severe Limitations Due to Low Water Holding Capacity

Mixtures for Revegetation of Highly Erosive or Disturbed Sites

	Mixtures and Species in Numbered Order of Preference	Variety name in Order of Preference	Drill* Seeding Rate lbs/Ac.	Fertilizer 1st yr.	Fertilizer 2nd yr.
Mix 1	Red fescue	Arctared Boreal	15	60–60–60	30–60–30
	White Dutch or Alsike clover		1-2		
	Annual Ryegrass		5		
Mix 2	Kentucky bluegrass	Nugget Merion	10	60–60–60	30–60–30
	White Dutch or Alsike clover		1-2		
	Annual Ryegrass		5		
Mix 3	Meadow foxtail	Common	10	60–60–60	30–60–30
	Creeping foxtail	Garrison	10		

*If broadcast or hydroseeded, double the seeding rate.

Species for Cropland Use

Species in Numbered Order of Preference	Variety name in Order of Preference	Drill* Seeding Rate lbs/Ac.	Fertilizer 1st yr.	Fertilizer 2nd yr.
1. Meadow foxtail	Common	10	60–60–60	
2. Timothy	Engmo Common	6	60–60–60	
3. Reed canarygrass**	Frontier	10	60–60–60	

** Use in wet spots only

C3–SOUTHEAST AREA
GROUP 4*

Soils and Sites with Moderate
Limitations Due to Excess Moisture

Mixtures for Revegetation of Highly Erosive or Disturbed Sites

	Species in Numbered Order of Preference	Variety name in Order of Preference	Drill* Seeding Rate lbs/ac.	Fertilizer 1st yr.	Fertilizer 2nd yr.
1	Meadow foxtail	Common	10	60–60–60	60–60–60
2	Red top	Common	5	60–60–60	60–60–60
3	Reed canarygrass	Frontier	10	60–60–60	60–60–60

Species for Cropland Use

Species in Numbered Order of Preference	Variety name in Order of Preference	Drill* Seeding Rate lbs./Ac.	Fertilizer 1st yr.	Fertilizer 2nd yr.
1. Meadow foxtail	Common	10	60–60–60	60–60–60
2. Creeping foxtail	Garrison	10	60–60–60	60–60–60

*If broadcast or hydroseeded, double the seeding rate.

C3–SOUTHEAST AREA
GROUPS 5,6*

Soils and Sites with Severe
Limitations Due to Excess Moisture
Soils and Sites consisting of
Wet Peat Materials

When drained refer to Group 1
Undrained refer to Group 4

* These recommendations are based on judgement and not on actual trials in the area.

SECTION IV – Seeding Recommendations

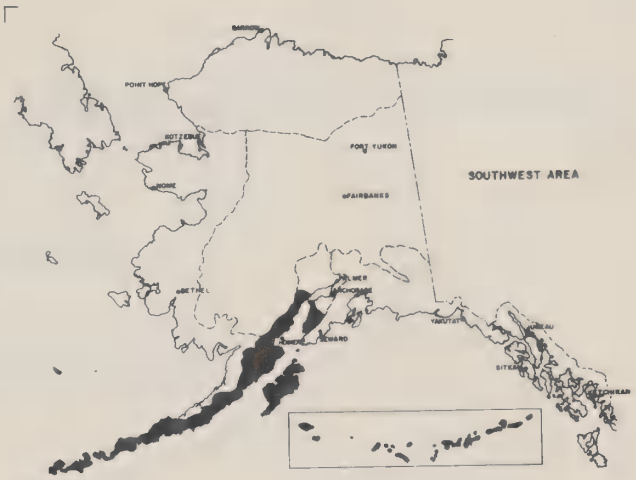
C4–SOUTHWEST AREA
GROUPS 1,2*

Soils and Sites with Few or No Limitations
Soils and Sites with Moderate Limitations Due to Low Water Holding Capacity

		Mixtures in Numbered Order of Preference	Variety name in Order of Preference	Drill Seeding Rate lbs/Ac.	Fertilizer 1st yr.	Fertilizer 2nd yr.
Mixtures for Revegetation of Highly Erosive or Disturbed Sites	Mix 1	Red fescue	Boreal or Arctared or Olds	15 10 10	60–60–60	60–60–60
		Meadow foxtail	Common	5		
		Alsike clover		2		
	Mix 2	Creeping foxtail	Garrison	10	60–60–60	60–60–60
		Alsike clover		2		

	Species in Numbered Order of Preference	Variety name in Order of Preference	Drill Seeding Rate lbs/Ac.	Fertilizer 1st yr.	Fertilizer 2nd yr.
Species for Cropland Use	1. Timothy	Engmo	6	60–60–60	120–60–60
	2. Creeping foxtail	Garrison	10	60–60–60	120–60–60
	3. Meadow foxtail	Common	10	60–60–60	120–60–60
	4. Kentucky bluegrass	Nugget or Merion	10	60–60–60	120–60–60

*These recommendations are based on judgement and not on actual trials in the area.



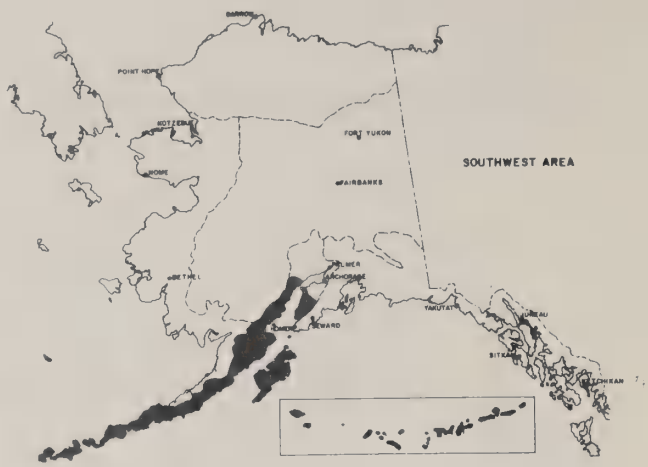
C4–SOUTHWEST AREA
GROUP 3*

Soils and Sites with Severe
Limitations Due to Low Water Holding Capacity

		Mixtures & Species in Numbered Order of Preference	Variety name in Order of Preference	Drill Seeding Rate lbs/Ac.	Fertilizer 1st yr.	Fertilizer 2nd yr.
Mixtures for Revegetation of Highly Erosive or Disturbed Sites	Mix 1	Hard fescue Alsike clover	Durar	10 2	60–60–60	60–60–60
	Mix 2	Red fescue Alsike clover	Boreal or Arctared or Olds	10 15 10 2	60–60–60	60–60–60

	Species in in Numbered Order of Preference	Variety name in Order of Preference	Drill Seeding Rate lbs/Ac.	Fertilizer 1st yr.	Fertilizer 2nd yr.
Species for Cropland Use	1. Red fescue	Boreal or Arctared or Olds	10 15 10	60–60–60	80–60–60
	2. Meadow foxtail	Common	10	60–60–60	120–60–60

*These recommendations are based on judgement and not on actual trials in the area.



C4–SOUTHWEST AREA
GROUP 4*

Soils and Sites with Moderate Limitations Due to Excess Moisture

Mixtures for Revegetation of Highly Erosive or Disturbed Sites

	Mixtures & Species in Numbered Order of Preference	Variety name in Order of Preference	Drill Seeding Rate lbs/Ac.	Fertilizer 1st yr.	Fertilizer 2nd yr.
Mix 1	Creeping foxtail or Meadow foxtail	Garrison Common	10	60–60–60	60–60–60
Mix 2	Red fescue Alsike clover	Boreal or Arctared or Olds	10 15 10 2	60–60–60	60–60–60

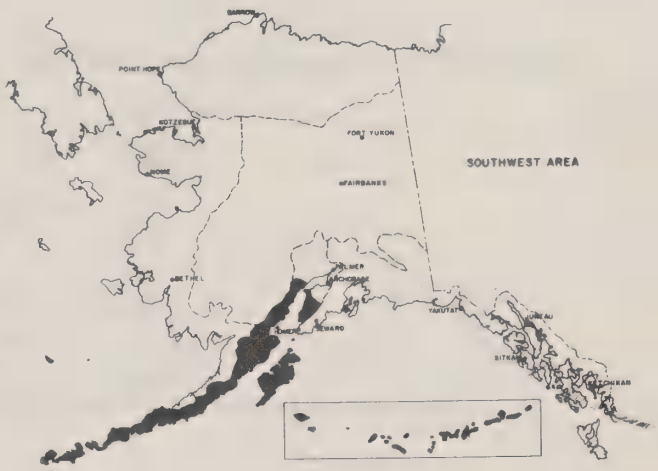
Species for Cropland Use**

Species in Numbered Order of Preference	Variety name in Order of Preference	Drill Seeding Rate lbs/Ac.	Fertilizer 1st yr.	Fertilizer 2nd yr.
1. Creeping foxtail	Garrison	10	60–60–60	120–60–60
2. Meadow foxtail	Common	10	60–60–60	120–60–60
3. Reed canarygrass***	Frontier	10	60–60–60	120–60–60

***Use new seed

**Note: These recommendations are for undrained soil.
For drained soil recommendations refer to Group 1 soils.

*These recommendations are based on judgement and not on actual trials in the area.



C4–SOUTHWEST AREA
GROUP 5

Soils and Sites with Severe Limitations Due to Excess Moisture

		Mixtures & Species in Numbered Order of Preference	Variety name in Order of Preference	Drill Seeding Rate lbs/Ac.	Fertilizer 1st yr.	Fertilizer 2nd yr.
Mixtures for Revegetation of Highly Erosive or Disturbed Sites	Mix 1	Creeping foxtail	Garrison	10	60–60–60	60–60–60
		Meadow foxtail	Common	10		
	Mix 2	Reed canarygrass	Frontier	10	60–60–60	60–60–60
		Alsike clover		2		

	Species in Numbered Order of Preference	Variety name in Order of Prefe:ence	Drill Seeding Rate lbs/Ac.	Fertilizer 1st yr.	Fertilizer 2nd yr.
Species for Cropland Use	1. Creeping foxtail	Garrison	10	60–60–60	120–60–60
	2. Reed canarygrass**	Frontier	10	60–60–60	120–60–60
	3. Meadow foxtail	Common	10	60–60–60	120–60–60
	4. Kentucky bluegrass	Nugget or Merion	10	60–60–60	120–60–60

**Use new seed

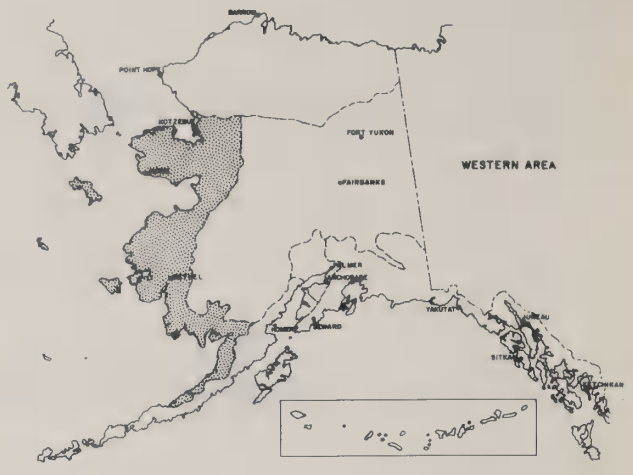
C4–SOUTHWEST AREA
GROUP 6

Soils and Sites consisting of Wet Peat Materials

(There are no seeding recommendations for this group)

Disturbed wet areas may be revegetated by sodding or spreading living material from adjacent areas, packing and fertilizing according to soil tests.

*These recommendations are based on judgement and not on actual trials in the area.



C5–WESTERN AREA
GROUPS 1,2*

Soils and Sites with Few or No Limitations
Soils and Sites with Moderate Limitations Due to Low Water Holding Capacity

		Mixtures in Numbered Order of Preference	Variety name in Order of Preference	Drill Seeding Rate lbs/Ac.	Fertilizer 1st yr.	Fertilizer 2nd yr.
Mixtures for Revegetation of Highly Erosive or Disturbed Sites	Mix 1	Red fescue	Arctared or	15	60–60–60	60–60–60
			Boreal or	10		
			Olds	10		
		Alsike clover				
	Mix 2	Meadow foxtail	Common	10	60–60–60	60–60–60
		Alsike clover				
	Mix 3	Creeping foxtail	Garrison	10	60–60–60	60–60–60
		Alsike clover		2		

Cropland Use: Climate limits cropland considerations.
No cropland recommendations

*These recommendations are based on judgement and not on actual trials in the area.

C5–WESTERN AREA
GROUP 3 *

Soils and Sites with Severe Limitations Due to Low Water Holding Capacity

		Mixtures & Species in Numbered Order of Preference	Variety name in Order of Preference	Drill Seeding Rate lbs/Ac.	Fertilizer 1st yr.	Fertilizer 2nd yr.
Species for Revegetation of Highly Erosive or Disturbed Sites	Mix 1	Crested wheatgrass	Nordan	5	60–60–60	60–60–60
		Hard fescue	Durar	5		
	Mix 2	Hard fescue	Durar	10	60–60–60	60–60–60
	Mix 3	Red fescue	Boreal or Arctared or Olds	10 15 10	60–60–60	60–60–60
	Mix 4	Meadow foxtail	Common	10	60–60–60	60–60–60
		Alsike clover		2		

Cropland Use

Climate limits cropland considerations.
No cropland recommendations

*These recommendations are based on judgement and not on actual trials in the area.

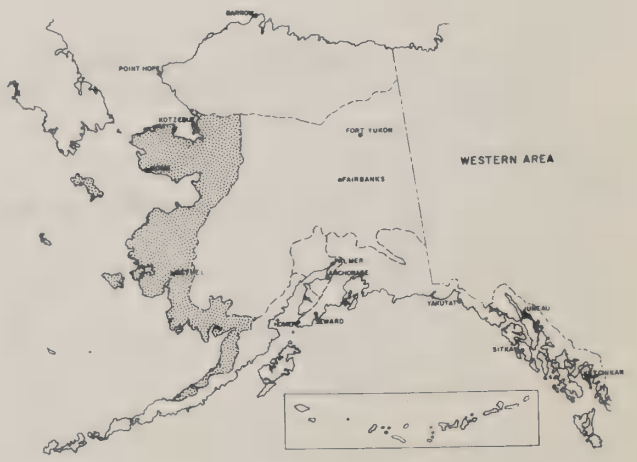
C5–WESTERN AREA
GROUPS 4,5

Soils and Sites with Moderate Limitations Due to Excess Moisture
Soils and Sites with Severe Limitations Due to Excess Moisture

		Mixtures & Species in Numbered Order of Preference	Variety name in Order of Preference	Drill Seeding Rate lbs/Ac.	Fertilizer 1st yr.	Fertilizer 2nd yr.
Species for Revegetation of Highly Erosive or Disturbed Sites	Mix 1	Meadow foxtail	Common	10	60–60–60	60–60–60
		Alsike clover		2		
	Mix 2	Creeping foxtail	Garrison	10	60–60–60	60–60–60
		Alsike clover		2		

Cropland Use	Climate limits cropland considerations No cropland recommendations

*These recommendations are based on judgement and not on actual trials in the area.



C5–WESTERN AREA
GROUP 6

Soils and Sites consisting of Wet Peat Materials

(There are no seeding recommendations for this group)

Disturbed wet areas may be revegetated by sodding or spreading living material from adjacent areas, packing, and fertilizing according to soil tests.

C6–ARCTIC AREA
ALL GROUPS

General Statement on Arctic Soils and Sites Groups

All soil groups – Anticipate no vegetative soil and site Group I or II.
No commercial seed is available for native species

To revegetate highly erosive or disturbed sites spread or place freshly cut native cottongrass, sedges or other native tundra sod vegetation on the area.. Pack well and fertilize as indicated by soil tests.

Section V.

Lawn and Turf Seeding

A. Introduction

Lawns and turf should be seeded on good topsoil areas. Adequate drainage is essential to avoid winter-kill caused by ponding.

Prepare a firm seedbed, then rake and apply fertilizer; apply lime also if the soils at the site are acid. Wet the area for a period of two weeks to allow for settling, then resmooth if necessary. Sow seed so that it uniformly covers the entire area. This should be done before July 15 to insure a good growth and an adequate root system to go into winter. After fertilizing and seeding, rake and roll the area to cover and pack the seed.

Water the new lawn frequently until it is well established. After establishment, special care should be taken to keep the newly seeded areas continually wet after germination until seedlings are well established. Thorough soakings should then be applied to insure deep root development.

B. Cultural Practices

(1.) Seed: Kentucky bluegrass and/or Creeping Red fescue

Kentucky bluegrass 2 lbs. per 1000 spuare feet or 85 lbs. per acre
or
Creeping Red fescue 3 lbs. per 1000 square feet or 125 lbs. per acre
or
Mixture of fescue and bluegrass 1 lb. bluegrass and 1-1/2 lbs. fescue per 1000 square feet

A top dressing of 75pounds of ammonium nitrate per acre (or 1-3/4 pounds per 1000 square feet) should be applied in the early spring and again in July of each year after the lawn is established.

(2.) Fertilization:

500 lbs of 10–20–20 and 100 lbs. ammonium nitrate per acre or 15 lbs. of the same ratio per 1000 square foot.

(3.) Mowing:

To insure a good growth, a good root system, and to prevent infestation by weeds do not clip lawn shorter than 1-1/2 to 2 inches.

Section VI

Woody and Herbaceous Groundcoverings

INTRODUCTION

While some plant materials show real promise for groundcover treatment in Alaska, a great deal of research is needed to determine the best means of propagation and utilization of these materials. At the present time a limited number of both native and exotic plants are available commercially as seeds, starts, and cuttings, ready to plant.

Planning is critical in using the ornamentals and ground covers, especially in soil preparation. Good plantings are the result of thoughtful planning and the selection of proper plant materials and careful soil preparation in advance of planting.

Soil should be prepared as carefully as for any lawn. It should be at least 6" deep, have good drainage characteristics, plus the addition of fertilizers, so that you have a good base with which to begin. The 6" soil depth is the minimum needed for planting any of the woody ornamentals.

Soil testing is a necessity, as the pH level is critical for a great number of the woody groundcovers. Some of the woody plant materials will not survive at all at the higher pH levels or at the extremely low pH levels.

Fertilization also is critical since the majority of the fertilizer should be applied and mixed with the soil prior to placement of the woody ornamental plant materials or woody groundcovers. Although it is possible to fertilize after establishment of these plant materials, in general this is not a common practice; and in roadside beautification or revegetation of construction scars, it may be impractical since individual plants must be fertilized.

In planting or setting out woody ornamentals, it is extremely important to keep any bare roots moist. Similarly the soil should be kept on the balled, burlapped and container grown plant materials to prevent jarring and loosening of the root media. When plant materials are placed in the field, the plants should be placed into a hole that has been filled with water. This is particularly important if you are planting balled and burlapped bed plants or container grown materials. The root balls must have high moisture content or they may be forced back out of the ground.

The planting pattern plays an important role in establishing ground covers. One of the common ways of planting is to alternate plants in the rows, which has esthetic advantages and disadvantages. If a checkerboard type of pattern is needed to indicate an interchange on a highway, this is fine. However, to plant mile after mile down the side of a roadway with alternate planting may become visually tiring and hypnotic. Therefore, under most conditions, random spacing is preferred. In any case, the desired result should be a uniformly covered ground space, in as short a period of time as seems economically practical.

After setting in the field, plants should be thoroughly watered, especially while they are becoming established. In some cases mulches may be required. During the first two growing seasons, supplemental water needs to be applied during any drought period.

The following two tables list some of the more commonly available ornamental plant materials and their site adaptations along with individual plant characteristics.

Other potential groundcovers are listed following the two tables. The plants listed are, in general, not available from commercial sources. However, they may warrant consideration under adverse conditions, with particular emphasis upon the natives.

1. Herbaceous Groundcovers

Plant Scientific Name / Common Name	Site Adaptation: Soil Texture	Drought Tolerance	Wet & Fld Tolerance	Acid Tolerance	Adaptable Region[3]	Plant Characteristics: Height	Plant Spacing[1]	Root System[4]	Cover Rate[2]
Achillea millefolium Yarrow	light moderate	excellent	poor	good	W,I,SW, C-I,SE	18"	3"	Fib	sl
Achillea millefolium roses Pink Milfoil	light moderate	excellent	poor	good	W,I,SW, C-I,SE	6"–2"	3"	Fib	sl
Arabis alpina Alpine Rock-cress	moderate	good	poor	good	SW,C-S, SE	4"–10"	12"	Fib	Rap
Arabis caucasia Wall Rock-cress	moderate	good	poor	fair	SW,C-S, SE	4"–10"	18"	Fib	med
Arenaria verna caespitosa Moss Sandwort	light	good	excellent	good	All	2"	12"	Fib	Rap
Artemisia stellariana Dusty Miller	light	excellent	poor	fair	W,I,C-S, SW,SE	2–1/2'	12"	Rhiz	Rap
Cerastium tomentosum Snow-in-summer	moderate	good	good	good	All	3–6"	3'	Fib	Rap
Dianthus deltoides Maiden Pink	light	good	poor	good	All	2–6"	2'	Rhiz	med
Raunculus montanus Mountain Buttercup	moderate	good	good	excellent	SW,C-S, SE	6"	8"	Rhiz	Rap
Ranunculus repens pleniflorus Double Creeping Buttercup	moderate	good	good	good	SW,C-S, SE	6–12"	2'	Rhiz	Rap
Sedum acre Goldmoss Stonecrop	light moderate	excellent	good	good	SW,C-S, SE	4"	12"	Rhiz	med
Stachys lanata Lambs-ears	light moderate	good	fair	good	SW,C-S, SE	12–18"	18"	Rhiz	Rap

[1]This is the approximate spacing in pure stands. Since most of these seeds are extremely small (10,000–225,000 seeds/ounce) it is suggested that planting be done as a mixture with grass seed. The amount of seed to apply per acre would normally be approximately one-half cup.

[2]This is a relative spreading rate following establishment. (sl-slow, Rap-rapid, med-medium)

[3]See map page
All–All of Alaska
C-I–Cook Inlet-Susitna
I–Interior
SE–Southeastern
SW–Southwestern
W–Western

[4]Fib.–fibrous root system Rhiz–rhizomatous root system

2. Woody Groundcovers

Plant Scientific Name / Common Name	Site Adaptation					Plant Characteristics			
	Soil Texture	Drought Tolerance	Wet & Fld Tolerance	Acid Tolerance	Adaptable Region[3]	Height	Plant Spacing[1]	Root System[4]	Cover Rate[2]
Andromeda polifolia Box rosemary	heavy	poor	excellent	excellent	All	12–24"	6'	Rhiz	med
Caragana pygmaea Dwarf Caragana	medium	excellent	poor	excellent	W,I,SW, C-S,SE	24–36"	6'	Fib	med
Gaultheria procumbens Wintergreen	heavy	poor	excellent	excellent	W,I,SW SE,C-S	3"	3'	Fib (Stolons)	med 5
Juniperus chinensis sargenti Sargent Juniper	light	excellent	poor	good	SW,SE	12"	8'	Fib	med
Juniperus horizontalis Creeping Juniper	light	excellent	poor	good	W,I,SW, C-S,SE	12–18"	8'	Fib (Branch tip)	med 5
Juniperus horizontalis plumosa Andorra Juniper	light	excellent	poor	good	SW,SE	12–18"	8'	Fib	sl
Juniperus sabin tamariscifolia Tamarix Juniper	light	excellent	poor	good	SW,C-S, SE	18–24"	8'	Fib (Branch tip)	sl 5
Potentilla fruticosa Cinquefoil	medium	excellent	poor	excellent	All	24–36"	3'	Fib	sl
Symphoricarpus orbiculatus Indian Snowberry	medium	excellent	poor	good	All	24–36"	6'	Fib (Suckers)	Rap 5
Viburnum opulus nanum Dwarf European Cranberry bush	medium	good	fair	good	SW,SE	12–24"	12"	Fib	sl

[1]This is an optimum spacing. Less dense plant spacing may require inter-planting with herbaceous groundcovers to achieve adequate ground coverage.

[2]This is a relative spreading rate following establishment. (sl-slow, Rap-rapid, med-medium)

[3]See map page
All–All of Alaska
C-S–Cook Inlet-Susitna
I–Interior
SE–Southeastern
SW–Southwestern
W–Western

[4]Fib–fibrous root system Rhiz–rhizomatous root system

[5]Spreads rapidly from these structures

Appendices

A. Land Capability Classification

B. Common and Scientific Names of Plants

1. Grasses and Legumes
2. Herbaceous Groundcovers
3. Woody Groundcovers

C. Plant Characteristics

1. Grasses
2. Legumes

D. Sources for Technical And On-Site Assistance

APPENDIX A

Land Capabilities Classification

The capability classification is a practical group of soils. Soils and climate are considered together as they influence use, and management.

The hazards and limitations in use increase as the class number increases. Class I has few hazards or limitations, or none, whereas Class VIII has many.

Capability classes are divided into subclasses. These show the principal kind of conservation problem involved. The subclasses are: "e" for erosion, "w" for wetness, "s" for soil, and "c" for climate.

Capability classes and subclasses, in turn, may be divided into capability units. A capability unit contains soils that are nearly alike in suitability for crop growth and in management needs. Numbers which follow the capability subclasses designation are used to identify capability units.

LAND CLASSIFICATION

CLASS I – No Class I soil in Alaska due to climatic limitations.

CLASS II – Soils have few limitations or hazards. Simple conservation practices are needed when cultivated.

CLASS III – Soils have more limitations and hazards than those in Class II. They require more difficult or complex conservation practices when cultivated.

CLASS IV – Soils have greater limitations and hazards than Class III. Still more difficult or complex measures are needed when cultivated.

CLASS V – No Class V soils in Alaska.

CLASS VI – Soils have severe limitations or hazards that make them generally unsuited for cultivation.

CLASS VII – soils have very severe limitations or hazards that make them generally unsuited for cultivation.

CLASS VIII – Soils, and land forms in Class VIII have limitations and hazards that prevent their use for cultivated crops, pasture, range, or woodland.

Highway seedings in less than one year provide good bank stabilization.

SCS PHOTO ORC-306-9

"Calamogrostis" (blue joint reed grass) is the major native grass in Alaska and provides excellent cover.

SCS PHOTO ORC-300-10

APPENDIX B

COMMON AND SCIENTIFIC NAMES OF PLANTS

1. Grasses & Legumes

Common Names	Scientific Names
Grasses	
Agropyron sericeum*	*Agropyron sericeum*
Annual ryegrass	*Lolium multiflorum*
Beach wildrye*	*Elymus mollis*
Bluejoint*	*Calamagrostis canadensis*
Cottongrass*	*Eriophorum angustifolium*
Cottongrass*	*Eriophorum vaginatum*
Creeping foxtail (Garrison)	*Alopecurus arundinacea*
Creeping red fescue	*Festuca rubra*
Crested wheatgrass (Nordan)	*Agropyron desertorum*
Hard fescue (Durar)	*Festuca ovina duriuscula*
Kentucky bluegrass (Nugget, Merion)	*Poa pratensis*
Medow foxtail (common)	*Alopecurus pratensis*
Quackgrass*	*Agropyron repens*
Red fescue (Arctared, Olds, Boreal)	*Festuca rubra*
Redtop	*Agrostis alba*
Reed canarygrass (Frontier)	*Phalaris arundinacea*
Sedge*	*Carex aquatilis*
Siberian wildrye*	*Elymus sibiricus*
Smooth brome (Polar, Manchar)	*Bromus inermis*
Streambank wheatgrass (Sodar)	*Agropyron riperium*
Timothy (Engmo)	*Phleum pratense*
Legumes	
Alsike clover (Aurora)	*Trifolium hybridum*
Red clover* (Alaskland)	*Trifolium pratense*
White dutch clover	*Trifolium repens*
White sweet clover	*Melilotus alba*
Yellow sweet clover	*Melilotus officinalis*

*Seed not available.

The following common grasses have been tested and are not sufficiently winter hardy for use as perennials in Alaska: Intermediate wheatgrass, Pubescent wheatgrass, Tall wheatgrass, Orchardgrass, Tall fescue, Tall oatgrass, Perennial ryegrass.

APPENDIX B

COMMON AND SCIENTIFIC NAMES OF PLANTS

2. Herbaceous Groundcovers

Common Names	Scientific Names
Bedstraws	
Northern Bedstraw*	*Galium boreale*
Sweet-Scented Bedstraw*	*Galium triflorum*
Yellow Bedstraw*	*Galium verum*
Bellflowers	
Bellflower*	*Campanula lasiocarpa*
Carpathian Bellflower	*Campanula carpatica*
Posckarsky Bellflower	*Campanula poscharskyana*
Fleece-flowers	
Alaska Fleece-flower*	*Polygonum alaskanum*
Bistort*	*Polygonum bistorta*
Fleece-flower*	*Polygonum viviparum*
Himalayan Fleece-flower	*Polygonum affine*
Water Smartweed*	*Polygonum amphibium*
Geraniums	
Alaskan Cranesbill*	*Geranium erianthum*
Dwarf Blood Red Geranium	*Geranium sanguineum prostratum*
Iris	
Crested Iris	*Iris cristata*
Wild Flag*	*Iris setosa*
Legumes	
Clovers	
Alsike Clover**	*Trifolium hybridum*
Red Clover**	*Trifolium pratense*
White Clover**	*Trifolium repens*
Lupine	
Arctic Lupine*	*Lupinus arcticus*
Pointlocos	
Black Pointloco*	*Oxytropis nigrescens*
Maydelliane Pointloco*	*Oxytropis Maydelliana*
White Small-flower Pointloco*	*Oxytropis campestris*
Sweetvetch	
Alpine Sweetvetch*	*Hedysarum alpinum*
French Honeysuckle	*Hedysarum coronarium*
Mackenzi Sweetvetch*	*Hedysarum Mackenzii*
Vetch	
Alpine Milk Vetch*	*Astragalus alpinus*
Milk Vetch*	*Astragalus umbellatus*

APPENDIX B

Common Names	Scientific Names
Mints	
Field Mint*	*Mentha arvensis*
Peppermint	*Mentha piperita*
Potentillas	
Rusty Cinquefoil	*Potentilla cinerea*
Tufted Potentilla*	*Potentilla elegans*
Two-flowered Potentilla*	*Potentilla biflora*
Phloxs	
Hoods Phlox*	*Phlox hoodii*
Moss-pink	*Phlox subulata*
Siberian Phlox*	*Phlox sibirica*
Wild Sweet William	*Phlox divaricata*
Speedwells	
Germander Speedwell*	*Veronica chamaedrys*
Rock Speedwell	*Veronica prostrata*
Woolly Speedwell	*Veronica incana*
Strawberries	
American Strawberry	*Fragaria vesca americanum*
Beach Strawberry*	*Fragaria chiloensis*
Virginiana Strawberry*	*Fragaria virginiana*
Wormwoods	
Globe Wormwood*	*Artemisia globularia*
Tillesi Wormwood*	*Artemisia tillesii*
Other possibilities	
Alaska Carnation*	*Dianthus repens*
Alpine Heuchera*	*Heuchera glabra*
Alyssum*	*Alyssum americanum*
Big Betony	*Stachys grandiflora*
Chenaultii Snowberry	*Symphoricarpus chenaultii*
Creeping Jenny	*Lysimachlia nummularia*
Ground-ivy	*Nepeta hederacea*
Lace Flower*	*Tiarella trifoliata*
Marsh Violet*	*Viola epipsila*
Pearlwort*	*Sagina saginoides*
Ribbon-grass	*Phalaris arundinacea picta*
Roseroot*	*Sedum rosea*
Self-heal*	*Prunella vulgaris*
Thrift*	*Armeria maritima*
Woolly Yarrow	*Achillea tomentosa*

*Native
**Naturalized

APPENDIX B

COMMON AND SCIENTIFIC NAMES OF PLANTS

3. Woody Groundcovers

Common Names	Scientific Names
Broad leaf evergreens	
Blueberrys	
Black Huckleberry*	*Vaccinium uliginosum microphyllum*
Crowberry*	*Vaccinium vitis-idaea*
Dwarf Blueberry*	*Vaccinium caespitosum*
Lingonberry*	*Vaccinium vitis-idaea minus*
Lowbush Blueberry	*Vaccinium angustifolium laevifolium*
Shore Crowberry	*Vaccinium vitis-idaea magus*
Kinnikinnicks	
Alpine Kinnikinnick*	*Arctostaphylos alpinum*
Kinnikinnick*	*Arctostaphylos ura-ursi*
Red Kinnikinnick*	*Arctostaphylos rubra*
Labrador Teas	
Labrado Tea*	*Ledum palustre groenlandicum*
Hundson's Bay Tea*	*Ledum palustre decumbens*
Rhododendrons	
Kamchatka Rhododendron*	*Rhododendron camtschaticum camtschaticum*
Lapland Rosebay*	*Rhododendron lapponicum*
Rhododendron*	*Rhododendron camtschaticum glandulosum*
Needled evergreens	
Junipers	
Common Juniper*	*Juniperus communis*
Dwarf Prostrate Juniper	*Juniperus communis nana*
Flat Creeping Juniper	*Juniperus horizontalis glomerata*
Prostrate Juniper	*Juniperus communis depresa*
Waukegan Juniper	*Juniperus horizontalis douglasi*
Deciduous groundcovers	
Dogwoods	
Bunchberry*	*Cornus canadensis*
Kelsey Dogwood	*Cornus stolonifera kelseyi*
Raspberrys	
American Red Raspberry*	*Rubus idaeus*
Cloudberry*	*Rubus chamaemorus*
Nangoonberry*	*Rubus arcticus*
Running Swamp Blackberry	*Rubus hispidus*
Trailing Raspberry*	*Rubus pedatus*

APPENDIX B

Common Names	Scientific Names
Roses	
Nutka Rose*	*Rosa nutkana*
Prickly Rose*	*Rosa acicularis*
Rugosa Rose	*Rosa rugosa*
Woods Rose*	*Rosa woodsii*
Willows, Dwarf	
Arctic Willow*	*Salix arctica arctica*
Dwarf Gray Willow	*Salix tristis*
Netted Willow*	*Salix reticulata*
No common name for these native willows*	*Salix arctica crassijulis*
	Salix arctica torulosa
	Salix fuscescens
	Salix myrtillifolia
	Salix phlebophylla
	Salix polaris pseudopolaris
	Salix rotundifolia
	Salix Setchelliana
	Salix stolonifera
	Salix Barrattiana
	Salix niphoclada var. mexiae
	Salix niphoclada var. miphoclada
Other possibilities	
Bayberry	*Myrica pensylvanica*
Dward Birch*	*Betula nana exilis*
Dwarf Ninebark*	*Physocarpus opulifolius*
Hancock Coralberry	*Symphoricarpus 'Hancock'*
High Bush Cranberry*	*Viburnum edule*
Salal*	*Gaultheria shallon*
Sweet Gale*	*Myrica gale var. tomentosa*
Twin-flower*	*Linnaea borealis*
Wineleaf Cinquefoil	*Potentilla tridentata*

*Natives

APPENDIX C

Plant Characteristics

1. Grasses

		Smooth Brome	Timothy	Creeping foxtail	Meadow foxtail	Redtop	Canarygrass
Site Adapt-tations	Soil Groups & Texture Adaptation	I, II, III moderate	I, II, IV moderate	IV, V moderate	IV, V moderate	IV, V moderate	V wide
	Drought Resistance	good	poor	poor	fair	poor	good
	Wetness and Flood Tolerance	fair	good	very high	very high	high	very high
	Fertilizer Requirement	high	moderate	moderate	moderate	moderate	moderate
	Height Growth	tall	tall	moderate	moderate	low	tall
	Acidity Tolerance	very poor	fair	good	good	very good	very good
Plant Charac-teristics	Recommended Varieties	Polar & Manchar	Engmo & common	Garrison	common	common	Frontier common
	Seedling Vigor	good	moderate	moderate	weak	moderate	weak
	Yield Potential (forage)	high	high	high	moderate	low	high
	Longevity	long	intermediate	long	long	long	long
	Root System	sod	bunch	sod	bunch	slow sod	sod
	Compatability	high	high	poor	fair	fair	poor
	Palatability	high	fair	high	high	poor	fair
	Recovery Rate (after cutting)	moderate	slow	moderate	moderate	moderate	rapid
	Seeding Rate (alone drilled)	10-15	6	10	10	5	10
	Seed Production	high	moderate	low	low	low	moderate
	Winter Hardiness	high	high	high	high	high	moderate
Management Requirements	Use	multiple	multiple	multiple	multiple	multiple	multiple
	Minimum Stubble Height (inches)	3	4	4	4		6

APPENDIX C

Plant Characteristics - Grasses

1. Grasses (cont.)

		Beach Wildrye[1]	Kentucky Bluegrass	Bluejoint[1]	Annual Ryegrass	Crested Wheatgrass
Site Adapt-tations			I, II, IV	I – V	I, II, IV	II, III
	Soil Group & Texture Adaptation	moderate	wide	wide	wide	moderate
	Drought Resistance	very good	fair	very good	fair	very good
	Wetness and Flood Tolerance	good	good	good	fair	poor
	Fertilizer Requirement	low	high	medium	low	medium
	Height Growth	tall	short	tall	moderate	moderate
	Acidity Tolerance	fair	fair	very good	good	poor
Plant Charac-teristics			Nugget, Merion			
	Recommended Varieties	1.	common	1.		Summit
	Seedling Vigor	1.	fair	moderate	strong	strong
	Yield Potential (forage)	moderate	moderate	moderate	high	moderate
	Longevity	long	long	long	annual	long
	Root System	mild sod	sod	bunch	bunch	bunch
	Compatability	poor	good	fair	good	good
	Palatability	fair	high	moderate	good	fair
	Recovery Rate (after cutting)	moderate	rapid	slow	rapid	moderate
	Seeding Rate Alone Drilled		10		10	10
	Seed Production	very low	low	low	high	moderate
	Winter Hardiness	high	high	very high	annual	high
Management Requirements			critical area	critical area		
	Use	winter pasture	pasture	multiple	multiple	
	Minimum Stubble Height (inches)	6	3	6	0 (annual)	

1. Native, no commercial seed available.

APPENDIX C

Plant Characteristics

1. Grasses (cont.)

		Red fescue	Hard fescue	Elymus sibiricus[1]	Agropyron[1] sericeum	Streambank wheatgrass
Site Adapt-tations		I, II, IV	II, III			II, III
	Soil Groups & Texture Adaptation	wide	wide	wide	moderate	wide
	Drought Resistance	good	very good	good	moderate	very good
	Fertilizer Requirement	moderate	moderate	low	low	low
	Height Growth	moderate	short	moderate	tall	short
	Acidity Tolerance	good	good	fair	poor	poor
Plant Charac-teristics	Recommended Varieties	Arctared & Boreal	Durar	1.	1.	Sodar
	Seedling Vigor	strong	moderate	moderate	moderate	moderate
	Yield Potential (forage)	moderate	low	moderate	moderate	low
	Longevity	long	long	medium	long	long
	Root System	sod	bunch	bunch	bunch	sod
	Compatability	poor	poor	poor	high	fair
	Palatability	moderate	low	moderate	moderate	low
	Recovery Rate (after cutting)	rapid	moderate	slow	moderate	slow
	Seeding Rate Alone Drilled	10-15	10	15	15	10
	Seed Production	moderate	high	high	high	moderate
	Winter Hardiness	high	high	high	high	moderate
Management Requirements	Use	multiple	critical area	critical area	critical area	critical area
	Minimum Stubble Height (inches)	3	no cut	4	4	no cut

1. No commercial seed available. This is a native species.

Plant Characteristics

2. Legumes

		Alfalfa	Red Clover	Alsike Clover	Sweet Clover	White Dutch Clover
		I, II, III	I, II, IV	I, IV, V	II, III	I, IV, V
Site Adaptations	Soil Texture Adaptation	moderate	moderate	moderate	wide	moderate
	Drought Resistence	good	fair	fair	good	fair
	Wetness and Flood Tolerance	poor	fair	good	poor	fair
	Height Growth	moderate	moderate	moderate	tall	low
	Acidity Tolerance	poor	poor to fair	good	poor	poor
	Recommended Varieties	Siberian	Alaskaland	Aurora	Arctic	Northern Grown
	Yield Potential (forage)	moderate	moderate	moderate	high	low
Plant Characteristics	Longevity	long	short	short	biennial short	short
	Root System	tap root	fibrous root	fibrous root	tap root	fibrous root
	Compatability	good	good	good	fair	good
	Palatability	good	good	good	poor	good
	Recovery Rate (after cutting)	slow	moderate	moderate	high	moderate
	Seeding Rate Alone Drilled	5	5	4	5	4
	Seed Production	high	moderate	moderate	high	moderate
	Winter Hardiness	high	moderate	moderate	moderate	moderate
Management Requirements	Use	hay critical area	multiple	multiple	multiple	multiple
	Minimum Stubble Height (inches)	4	4	4	4	2

APPENDIX D

Sources for Technical and On-Site Assistance

Soil Conservation Service, USDA	Phone
Fairbanks, 1760 Westwood Way	479-6767
Homer, Box 394	235-8668
Palmer, Box F	745-3350
Institute of Agricultural Sciences	
Palmer, Box AE	745-3257
Cooperative Extension Service	
Fairbanks, 1512 So. Cushman, Suite 201	452-1548
Homer, Box 195	235-8698
Palmer, Box 736	745-3360
Anchorage, 2651 Provence Ave.	277-1488
Juneau, Box 109	586-7131